

Centre for Industry Education Collaboration (CIEC)

Children Challenging Industry (CCI)

Summary of Evaluation Report 2022-23



The Centre for Industry Education Collaboration (CIEC) aims to promote excellence in primary science teaching and learning, increase children's and teachers' awareness of STEM careers and industries, and raise children's science capital.

Since 1996, the CCI programme has:

- **Connected over 1000** inspiring scientists and engineers (CCI ambassadors) with teachers and children.
- **Empowered** 15,600+ teachers with science professional development.
- **Engaged** 62,000+ primary school children and raised their enthusiasm for STEM careers.

Participation in 2022-23



67 CPD sessions
for 1,184 teachers

32 site visits

60% of the programme was delivered in-person and 40% followed a combination of remote and in-person delivery



67 classes with
1,912 children



49% of children went to one of the 32 company site visits and 51% had a CCI ambassador visiting their class (in person or remotely)

The 2022-23 CCI team of advisory teachers



Melanie Boyeson



Clare Docking



Mackayla Millar



Nicky Waller



CENTRE for INDUSTRY EDUCATION COLLABORATION

How is CCI's impact evaluated? Children and teachers respond to surveys before and after participating in CCI, sharing their views of science and industry. Full details available from: <https://www.york.ac.uk/ciec/research/>

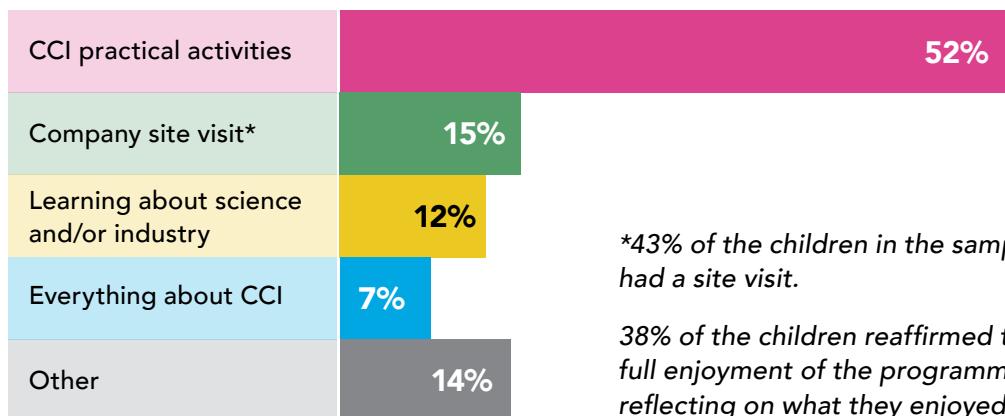


2022-23 Impact Evaluation Sample

- 1,327 children from 60 classes
- 48% of the children were girls and 52% were boys
- 59% of the children were in Year 5, and 41% were in Year 6.

Children described the CCI practical activities and the site visits as their top CCI experiences

What children enjoyed the most about CCI in 2023-23 (n=1050)

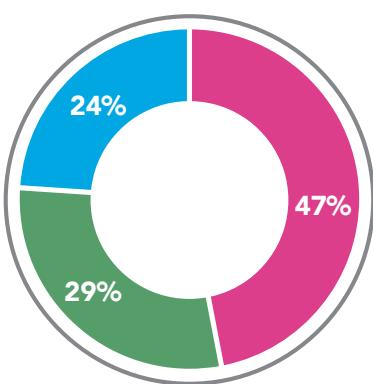


*43% of the children in the sample had a site visit.

38% of the children reaffirmed their full enjoyment of the programme when reflecting on what they enjoyed the least!

Children enjoyed the CCI practical activities best because they had fun learning something new or interesting

Why children enjoyed the CCI practical activities



- Had fun, enjoyment or excitement
- Learned something new or interesting while having fun/enjoying
- Other reasons



it is fun as we get to test/fix different companies problems and discover our own results... (Girl, Year 5)

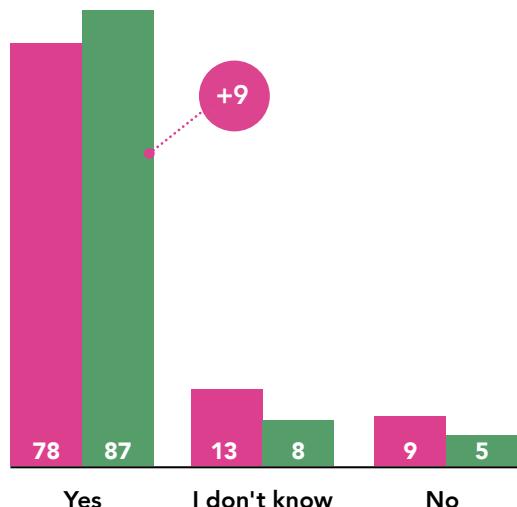
[CCI activities] showed us how fascinating industry is, and how many opportunities there are. (Boy, Year 5)

I enjoyed doing the pop rockets most! Because it was really fun and I got to work in a team and do my own experiments like a real scientist! (Girl, Year 6)

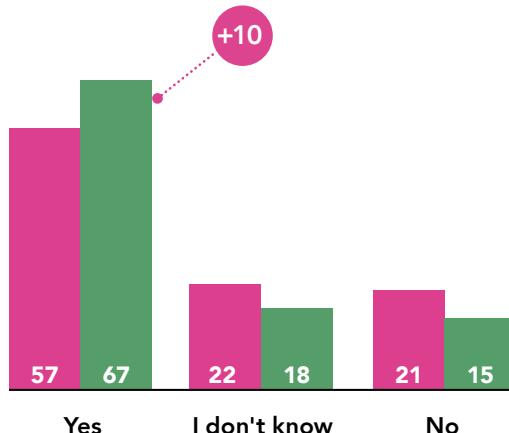
CCI ignites children's curiosity about industry and encourages them to learn with teachers

■ % Before CCI ■ % After CCI

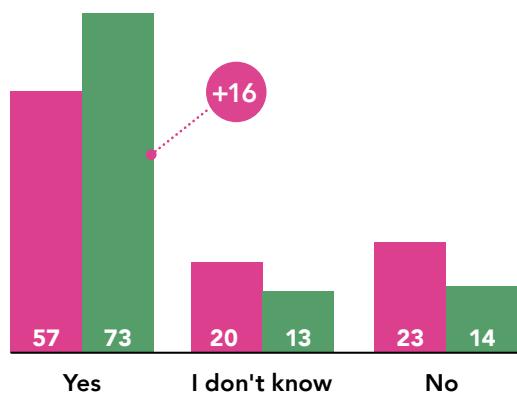
Industry makes things we need



Our lives would be worse without industry



I learn about industry from my teachers



I liked going to [company]. I enjoyed it because I got to see scientists and what they create. (Girl, Year 5)

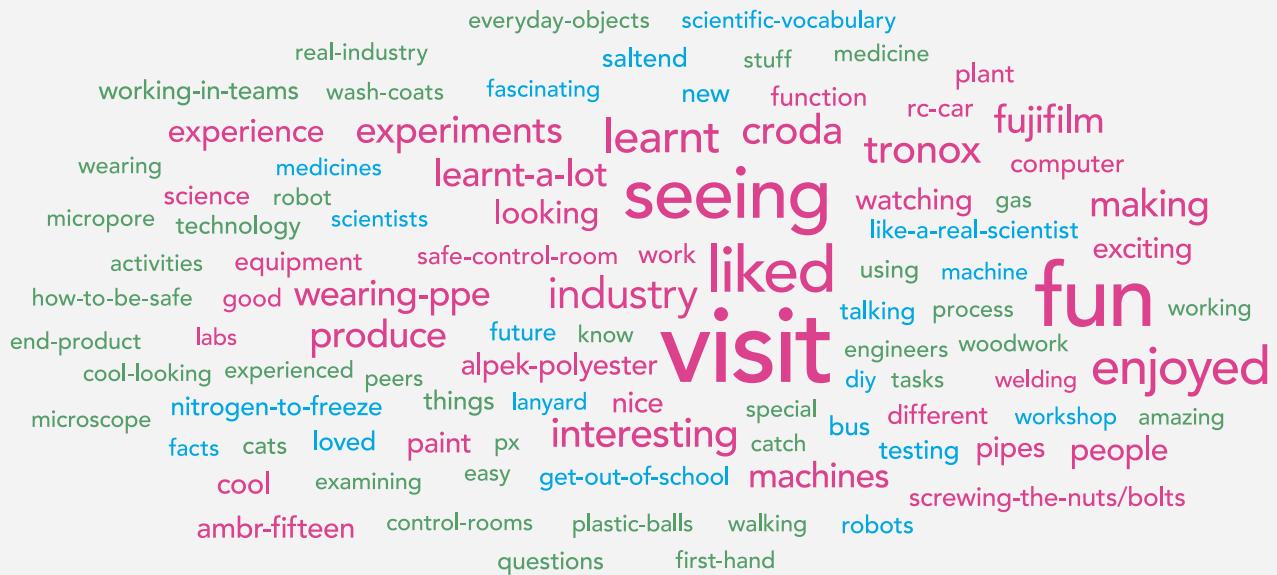
Children enjoyed the company site visits

It felt like we worked there. (Girl, Year 6)

Wearing safety clothing. It made me feel like a real scientist. (Boy, Year 6)

The trip was amazing. We got to experience industry first hand. (Boy, Year 5)

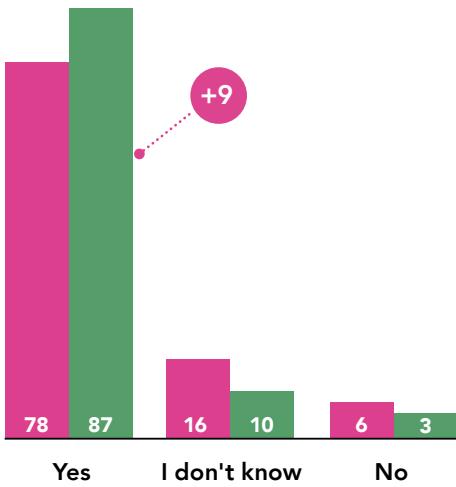




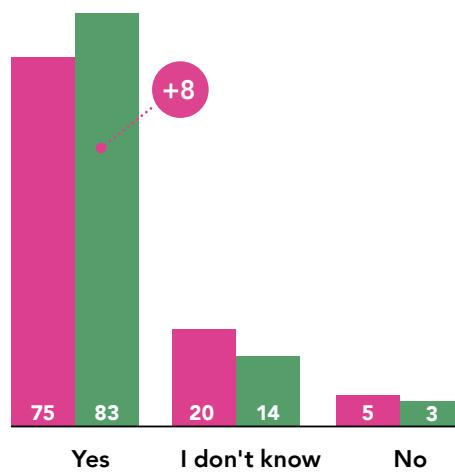
CCI raises awareness of the roles of scientists and engineers in industry

■ % Before CCI ■ % After CCI

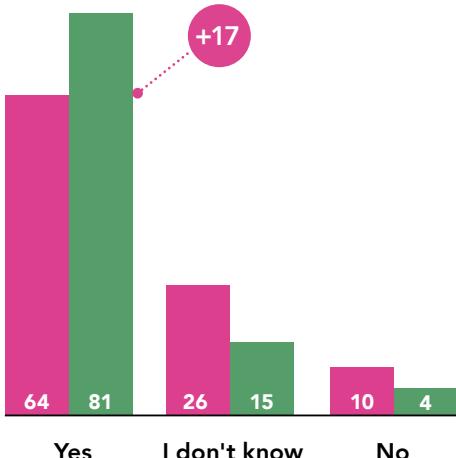
Scientists have important job in industry



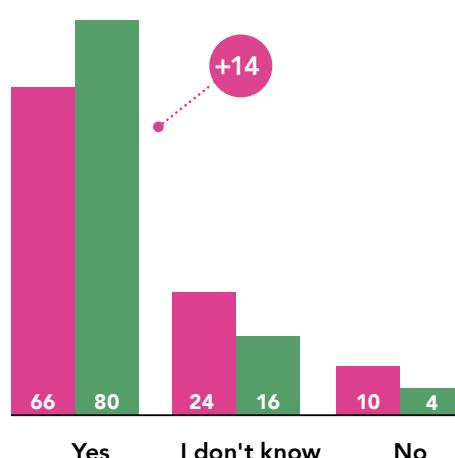
Engineers have important job in industry



Many scientists work in industry



Many engineers work in industry



The trip was amazing. We got to experience industry first hand. (Boy, Year 5)

I would like to be an engineer or a chemist. (Boy, Year 6)

i would like to manufacture environmentally healthy packaging. (Girl, Year 6)

CCI closes the gap

Children who saw parents as not interested in science saw a significant rise (11%) in wanting industry jobs after CCI.

We need to continue motivating children into seeing themselves as potential STEM professionals in the future.

the job that id like to do in industry is making cars and engines. (Boy, Year 5)

[I would like to be] Chemistry scientist who tests the experiments to see if the medicine or drug is in order to sell. (Girl, Year 6)

I would like to be a scientist and make things to make the pollution of industry as little as possible. (Boy, Year 6)

I would like to make cars and mobile if I were to work in industry. If I was in industry I would really love to be an engineer or a scientist. (Girl, Year 5)

Focus on teachers

CCI builds teacher expertise¹! From reactions to the programme to classroom impact, teachers gain lasting skills.

What do we know about the participating teachers?

Professional experience

- Avg. 12 years in the classroom
- Avg. 2.5 days spent doing Science CPD (last 3 years)

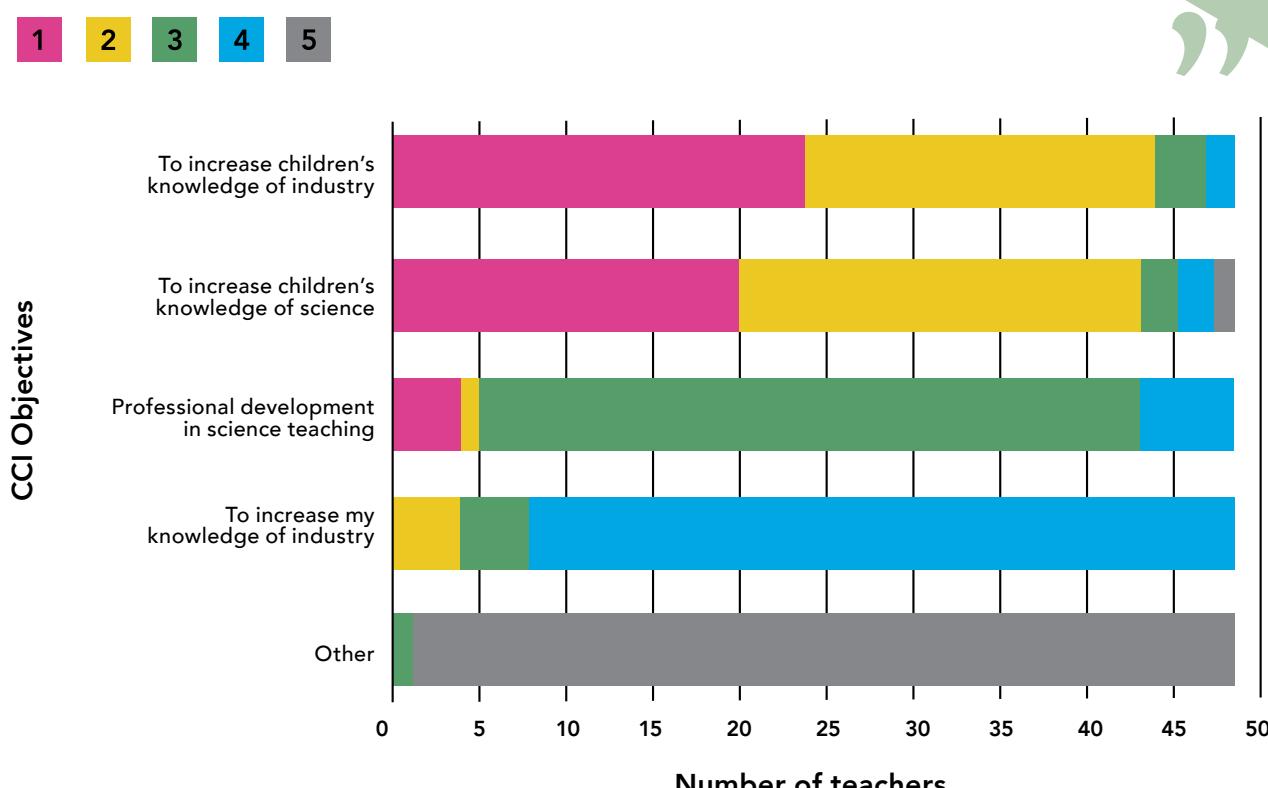
Prior CCI participation

- 17 teachers had previously participated
- 12 of 23 who recognised the 'science capital concept had previously participated in CCI Science Capital CPD

*Pre-questionnaire data, n=49-50

What are the main objectives of the CCI classroom sessions (n=48)

Ranking 1-5 with 5 being the most important objective.

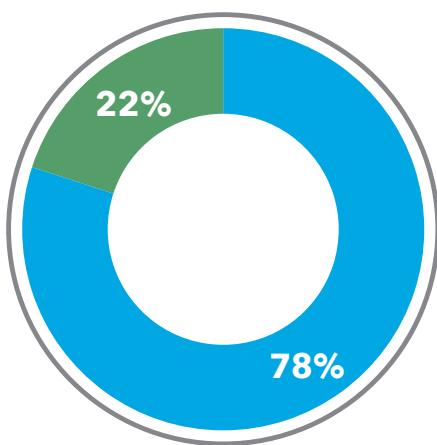


¹ Guskey, T. R. (2016). Gauge impact with 5 levels of data. *Journal of Staff Development*, 37(1), 32–37.

Teacher's reactions to CCI

Teachers' rating of the CCI programme (n=50)

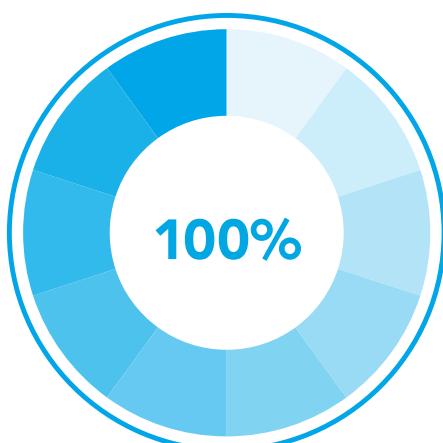
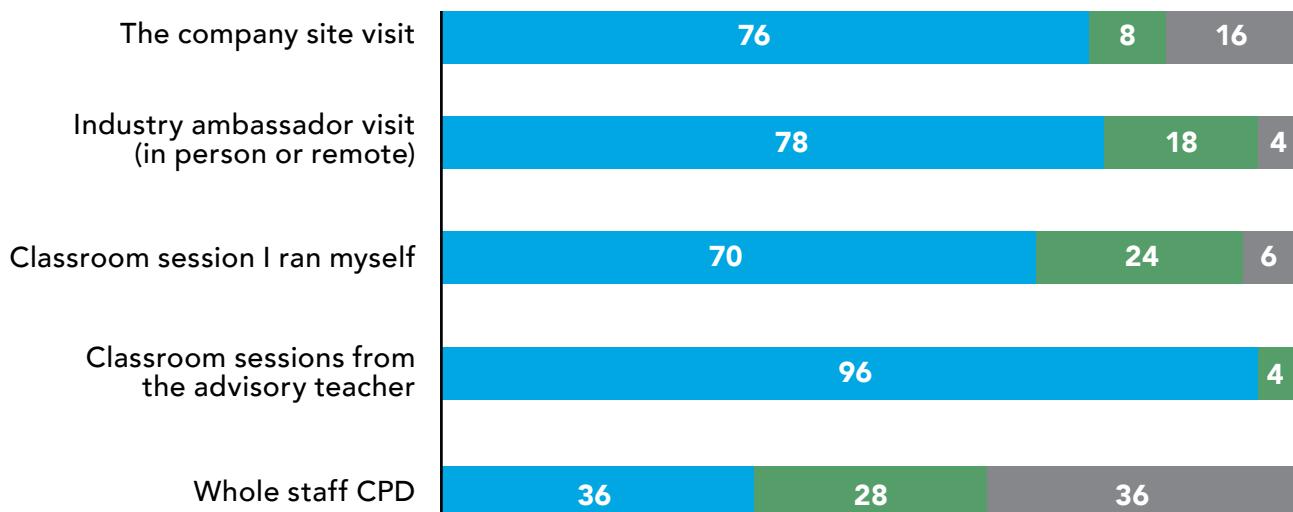
Excellent Good Satisfactory Poor



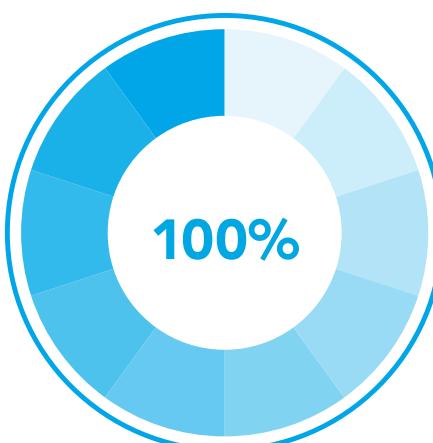
'An amazing programme from start to finish! The sessions were engaging and practical; giving each pupil a vital role in their experiment. They were able to find solutions to real life industry problems whilst having fun and developing key working scientifically skills from the National Curriculum.'

Teachers' rating of individual elements of the programme (n=50)

Very good Fairly good Fairly poor Very poor No response



agreed their expectations of CCI were met



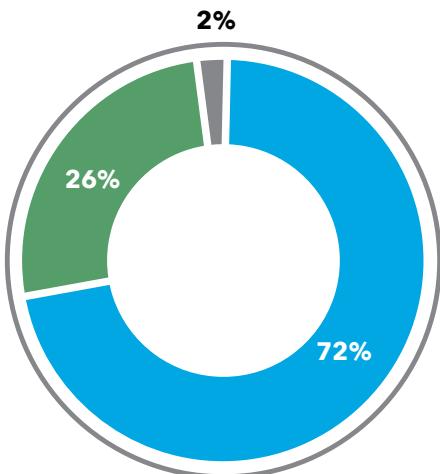
of the teachers (n=50) gave an overwhelmingly positive rating to CCI

I am incredibly happy with the whole service that we received from the CCI programme... I feel that the whole programme was beneficial for so many reasons and really showed the children that a career in STEM or industry is achievable

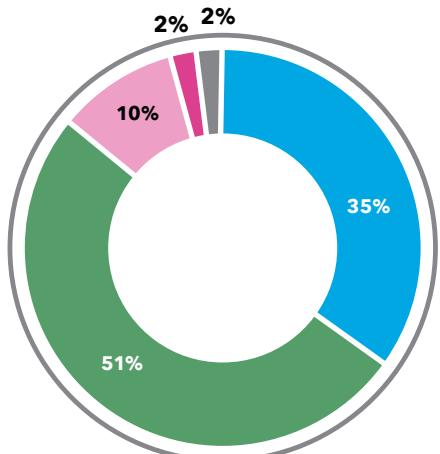
CCI boosts confidence

Strongly agree Partly agree Neither agree or disagree Partly disagree Disagree

My knowledge of industry has improved (n=49)



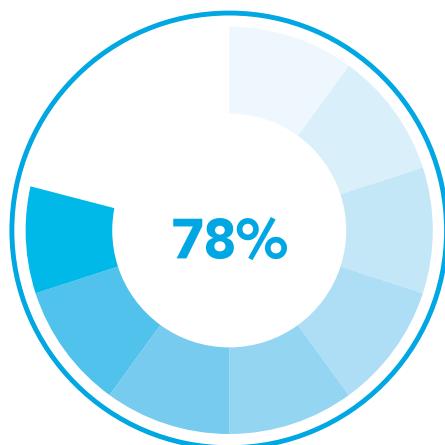
My confidence to teach science has improved (n=49)



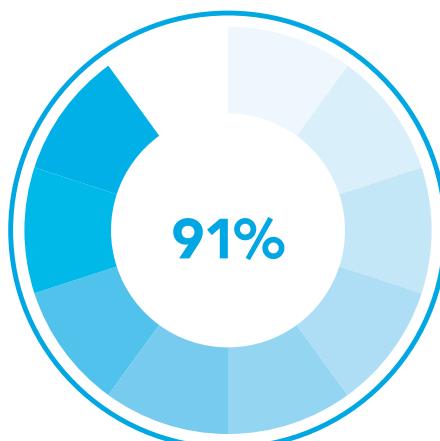
‘I would now welcome any further opportunities to be involved with other industrial companies as I feel the children hugely benefited from the opportunity to visit the site itself.’

‘I have more confidence to take on ‘messy’ experiments after seeing how much enjoyment the class got from the opportunity to get ‘stuck in’!’

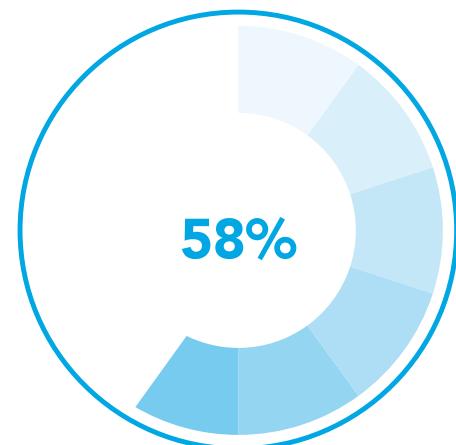
“The programme has made me feel more confident about delivering practical science lessons and the questions that I could ask/use alongside this.”



Believed the programme would benefit other classes in their school.



Shared their CCI experiences with colleagues.



Felt inspired to make changes in their practice.

Results summary

CCI successfully met its primary educational and professional development goals, providing a valuable learning experience for the participating children and teachers. Children enjoyed the CCI practical activities most, a consistent trend observed across the three regions and in previous annual evaluations. However, the reintroduction of company site visits sparked a renewed enthusiasm for learning about science in industry, igniting excitement in exploring the inner workings of science-based companies. Teachers universally recognised CCI's multiple strengths, with company site visits emerging as a pivotal factor. Finally, teachers raised their awareness of the benefits and importance of industry, bolstering their confidence in science teaching in the context of STEM careers.

CONTACT INFORMATION

Visit our website:

www.ciec.org.uk

Call us on 01904 322523

Email: ciec@york.ac.uk

Centre for Industry Education
Collaboration
University of York,
Heslington,
York, YO10 5DD

Sustainable stories and solutions for our planet

'Sustainable stories and solutions for our planet' is free for teachers to download, and highlights the issues and impacts of sustainability for upper key stage two (9-11 year-olds) children.

It contains practical and discussion activities including:

- Two generic introductory activities to develop children's awareness and understanding of sustainability.
- Several case studies from companies with a strong reputation in sustainability; with more being added each year.

Contact ciec@york.ac.uk if you would like your company's story to be told.

SUSTAINABLE STORIES AND SOLUTIONS FOR OUR PLANET

A science investigation pack for teachers of 9-11 year olds



innospec

Thomas Swan
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